#105181 GYRE 80-6A
GYRE (#80014)
W. Florida Shelf
June 14-July 5, 1980
C.Holmes/F. Manheim
SAMPLE/GEOCHEM LOG
80014109

GYRE ~~6-80~~ 80-6A

LOG BOOK

#80014
105181

Mdlg # 2114 - 0016 500ml square wide mouth bottles.

VERNON McMILLAN Inc.
THE ROYAL LINE

ACCOUNT BOOK

10 IN. x 8¼ IN. (25.4 cm x 20.9 cm)

AVAILABLE AS:	RULING:
No. 64-6118 (168-150-R) 150 pages	Record Ruled
No. 64-6138 (168-300-R) 300 pages	Record Ruled

MADE IN U.S.A.

VERNON McMILLAN Inc., ELIZABETH, N.J. 07208

GYRE 80-6A # 80014

14 June 80.

Depart New Orleans 1630
Out of Mississippi ~2400

15 June 80

acoustics with 3.5 mH sounder
Streaming 800 joule mini Sparker for seismic profiling.
Watches monitor navigation and 3.5 and sparker.

Set up ~~phosphorus~~ phosphorus ~~test~~ test for phosphorite indication:
20% HNO_3 ~ 10 seconds with sample
1 drop ~~sat~~ saturated ammonium molybdate as indicator. Bright yellow indication with phosphate rock standard (NBS). in spot plate.

Box Corer: found Driscoll (URI) had sent totally different corer than we had expected. Boxes are ~ 18"x5", However each box is different in exact dimentions. In order to sample. Theo has made up a sheet metal cap for the bottom so we can save the box.

For C14 this section, our original plates are not big enough. Therefore we will make up a seperate set of plates for each box using ⅛" plexiglass which Theo has supplied (personal).

LAB: Cut down syringes for squeeze and put gaskets on screens.

16 June 80

~~Core~~

1st station - Piston Core

G-6-80-I-cc

Lat. 28°59.79' Long. 88° 05.44'

Time 0925 ; 270 meters

29 foot core

core catcher sampled by Frank ① Paleo ② Pore water ③ Chem.

SAMPLE
G-6-80-I(cc)

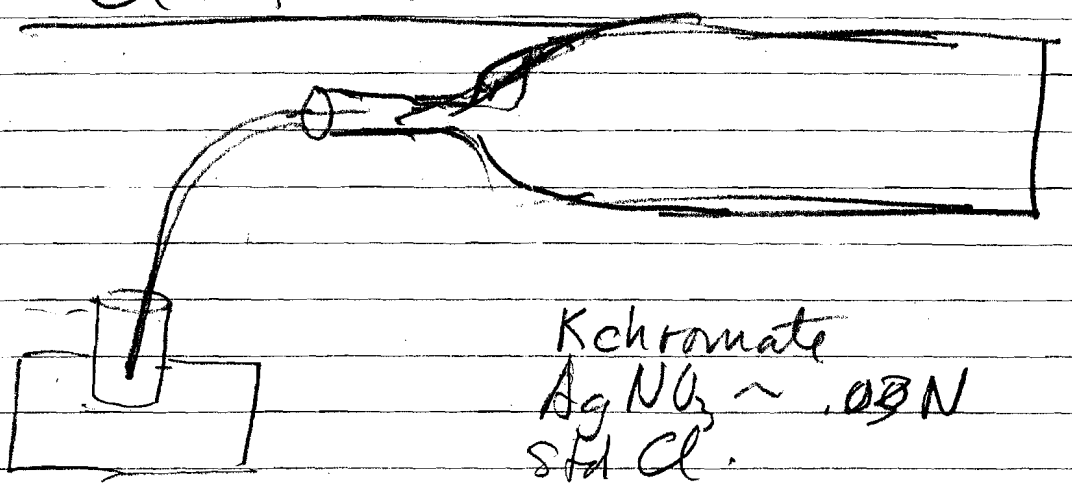
S 35.2 ‰
PO_4 - trace

~~Box Cores~~

Cl⁻ Titration:

Frank suggests using a fine stream of propane to stir samples.

Cl. Titration



Kchromate
$AgNO_3$ ~ .03N
std Cl.

1. Pipette solution [Accurate]
2. Add dist water + KCr
3. Fill burette
4. Titrate
5. Check blank
6. Include standards

Pore Water:
salinity (refract.) 35.2 ‰

PO_4 - Trace

Box corer: Decided to make sided box made out of sheet metal plates that we brought. This will be used to sub sample the main box. Test core rig - tripped OK, but there is a question about enough weight to penetrate and if the swing of the scoop will lift the corer out of the sediment.

Chem.: Cl^- - made up saturated solu. of $AgNO_3$ to be used to provide a consistant source of $AgNO_3$ for titration. This will be a trial and error technique until the proper dilution is found to approximate .05 N.

Found that T.R.V.M has an oxygen titration apparatus in the electronics lab. containing a small magnetic stirrer and a buret clamp. We will "borrow" these for the cruise.

Found that small pieces of 1/8" nails would work as stir bar. Have to check with Frank about metal in the titration, can epoxy if necessary. - Found sealed one in polyethylene, works fine.

Waters: Piston core set up for second

~~station~~, ready to go at ~ 0400 Tomorrow.

17 June 80

Piston Core STA. 2 - Sampled core catcher split for pore water, P and forams.
P = 0 ; S = 34.490o
START Phosphate Stations

P-1 Box Core-1 29° 20.0 x 87° 43.2 depth 170m
sub sampled - thin sections every 2 cm to 18 cm then 18-26 cm Tot 26 cm.
~~Sample~~ ~~[redacted]~~
~~grab~~ - 0-2 cm fine brown sand
2-~~18~~ cm shell sand 13 samples
~~18~~ 18-26 cm fine clay sand

preliminary P = 0

STA. P-2 29° 20' x 87° 43' depth ____
Box Core - ~~jammed~~ scoop jammed against box, thus believes cover pull out of sediment when the scoop was closing. Changed box.
Smith-McIntyre grab sample -
Large chunck of coral ~~was~~ caught in jaws - good grab. - fine sand
prelim. P = 0

STA. P-3 29°26' x 87°35' Smith-MacIntyre Grab
SM-1 75 m — didn't trigger
SM-2 81 m (75m) — well washed coral fragments with a few fines
prelim. P=0

Sparker Transect →

STA. P-4 29°40.5' x 87°37' (37m) Box Core
10 cm of brown material + shell + gravel over gray sand. with well preserved surface
sub sampled 0-2 cm, 2-6 and 6-10 cm
prelim. P=0

STA P-5 29°35.5' x 87°20.5' (110m) Box Core
14 cm light shell sand, most of surface washed away.
Entire box sampled:
0-4 cm, 4-9 cm and 9-14 cm.

Trayed gravity core — no luck

End of Frank's line

Start on piston core transects tomorrow. Will have two core crew on 8 hour watches while the rest mind the ship 4 hours at a time.
Talked to Theo about Dredges. He said they're clam dredges and

not worth a piece of shit. However we'll drag them out between the ~~core~~ piston core transect and the first drill Test.

Chem Lab:

Say doing some real fine work. Picked STA-2 → out the "mysterious ~~orgo~~ orange specs" to have S.E.M probe analysis of Phosphate ~~done~~ done.

Will finish up P analysis ~~on~~ on all our samples.

P routine:

4 sub samples (scoop)
2 aliquots of each sample
one ~~aliquot~~ aliquot mixed with D.W. and water pulled out of spot with wipette wick.
Acidify with 20% HNO_3 dropwise until carbonate fizz is relaxed. Add more acid then saturated ammonium molybdate solution.

Watch Steaming sporber on transect to core site.

18 June 80

Watch - Spiked sediment from Box Core of STA. P-1 with Phosphate Rock. ~ 5%, 10% and 15% → ~ 1, 2 and 3% P. Good color reaction with molybdate addition, but not necessarily in white precipitate region due to the lack of granular phosphate. Will watch for color deepening in routine analysis, especially those samples high in glauconite which give a yellow tint when reacted with the acid.

Frank says that he has checked all of the samples for P - so that's that.

Chem:

Filtered $AgNO_3$ - would not saturate so indicating it as concentrated (very!).

~~Made~~

K_2CrO_4 - made up ~ 5% solution by covering bottom of 25 ml vial with reagent and filling bottle ½ way. Add 1 drop of conc. $AgNO_3$ → red ppt., filtered.

Trial Titration

$AgNO_3$ 1 ml conc in 50 ml D.W.

Sea Water 0.5 ml

1 drop ~~Cr~~ Cr_2O_4

Too concentrated - 3 drop to cp. = no sensitivity

Trunk V5

Core 8 cc 3 = 35.3

Tried 10 fold dilution of $AgNO_3$ → 1/500 = Too dilute
will try .5/50 = 1/100 dilution.
Epoxyed nails for stir bars. OK.

See P.25 for Location

Piston Core Stations 3-7 Larry Doyle
line #1.
Samples from core catcher for pore water and bug testing.

19 June 80

see P. 25 for Location

Piston Core Stations 8 – 11 and Doggle line #1 sampled catcher for pore water and forams on to drill test site. ~ 1100 h

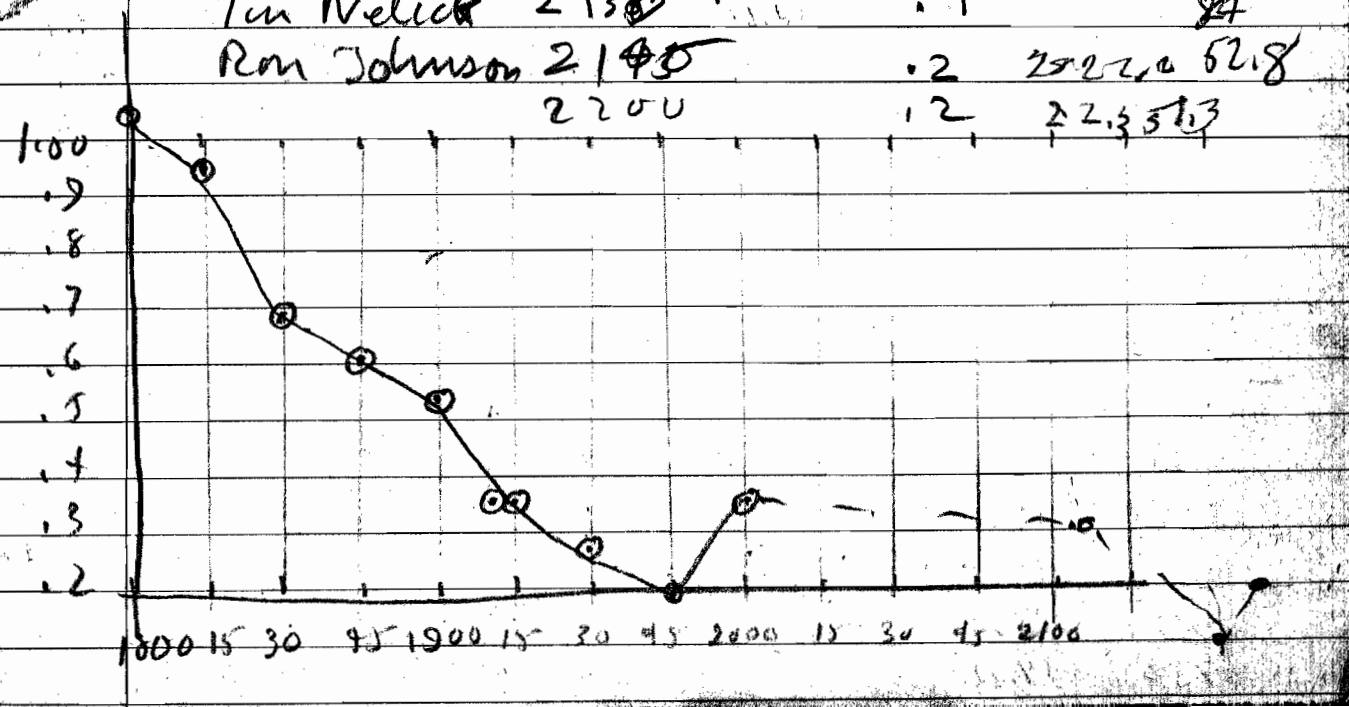
		T°C Thermistr	Thermom	
Salinotes	1737			32.3
	1750	30°?		32.4
	1805	29°		32.4
	1837	27.8		32.5
	1852	26.3°		32.6-1
	1909	27 (	28.1	32.8
	1937		28.0	32.6
	2005		27.8	32.4

water blue, with Sargassum weed

2034		27.9	32.4
2104		28.1	32.7

Carlsbad Coordinate Course Vector Line
Set & drift

	1/X	Y set & drift
		N-NW set
1800		1.04 tow S-SE
1815		.85
1830	28° 17.86 .85	11.25 .68
1845	18.28	9.87 .6
1900	18.7	8.57 .54
1910	19.3	7.66 .36
1915	19.19	7.22 .36
1930	19.7	5.83 .27
1945	21.2	4.41 .19
2000	20.71	3.05 .36
2115	21.5	55.7 .3
Tim Nelick	2130	.1
Ron Johnson	2145	.2 22.2 52.8
	2200	.2 22.3 51.3



1.8 m
5.5'
1.8 | 100
90
100

200
50

Check water sample for Loop current and found a surprisingly low salinity : began water testing ~ every ½ hour.

Procedure: water sample in bucket, ~~temp~~ take temp., record position and time (GMT) ~~Salinity~~ ~~is~~ and depth. Salinity is taken first with the refractometer and the after temperature equilibration seen on the Bissett + Berman Salinometer calibrated with IAPSO std. sea water Cl^- 19.376.

4/9 GMT Time	S_R	S_S	T °c	Loc			depth m
1737	32.3	32.86	—	28° 16.9'	x	85° 15.5'	
1750	32.4	32.84	—	17.0'	x	14.9	
1805	32.4	32.83	—	17.3'	x	13.3	
1837	32.8	32.85	—	18.1'	x	10.3	
1855	32.7	32.88	—	18.6'	x	09.0	
1909	32.8	32.86	28.1	19.0	x	07.7	
1937	32.6	32.81	28.0	20.0'	x	05.1	
2005	32.4	32.72	27.8	20.9'	x	02.4	150
2034	32.4	32.71	27.9	21.3'	x	84° 59.6	130
2104	32.7	33.05	28.1	21.6	x	56.6	110
2135	32.6	32.88	28.1	22.1	x	53.1	
2205	32.7	33.12	27.8	22.4	x	50.8	83
2242	33.5	33.74	28.0	22.8	x	47.2	
2305	34.1	34.16	27.8	23.1	x	45.0	
2343	34.2	34.33	27.8	23.6	x	41.4	
4/10 0017	34.1	34.28	27.7	24.0'	x	38.1	
0107	33.9	34.09	27.8	24.7	x	33.3	65
0136	34.0	34.47	27.8	25.1	x	30.3	72

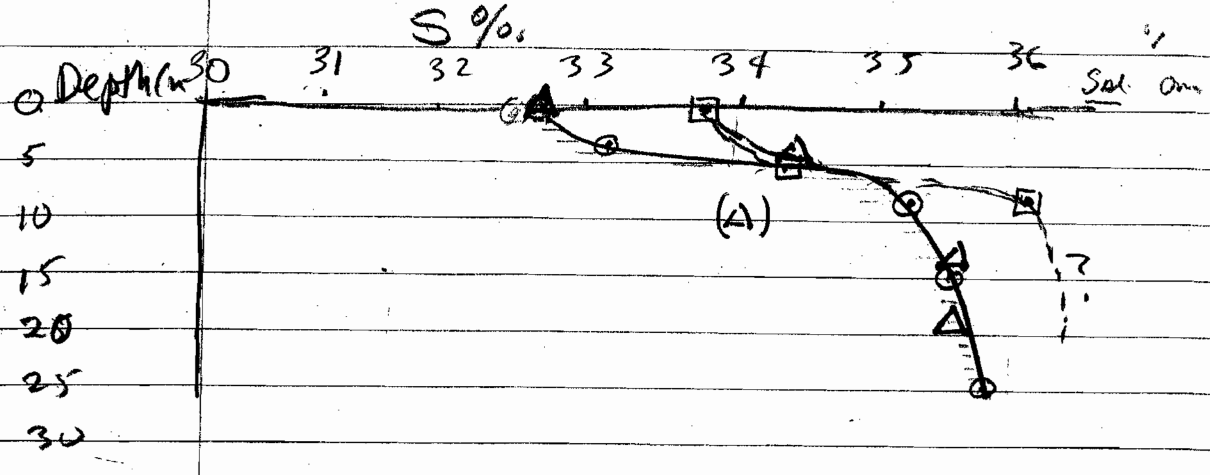
Time	S_R	δ_T	T°C	Loc.	anrot depth m
0205	34.0	34.30	27.6	28°25.7' x 84°27.0' C1	63
0234	34.0	34.21	27.5	28°26.2' x 84°23.8'	60
0303	34.0	34.24	27.5 27.6	28°26.6' x 84°20.4'	60
0404	34.5	34.76	~~28~~	28°27.5' x 84° 15.3'	43
0453	34.9	35.10	27.6	28°28.5' x 84°07.5'	45
0545	34.8	35.36	27.6	28 33.07 84 8.51	42
0700	34.6	34.96	~~2.98~~	28 36.66 84 13.65	42
0805	34.2	34.60	27.3	28 35.85 84 20.47	
0955	33.3	33.85	27.6	28 36.46 84 30.1	57
1100	33.7	34.04	27.6	28° 40.42' x 84°26.9'	63
1200	34.4	34.64	27.5	28° 41.29' x 84° 19.35'	43
1300	34.4	34.57	27.5	28°38.14' x 84° 15.83'	35
1416	34.4	34.61	27.6	28°30.2' x 84° 15.2'	48
1503	34.3	34.61	27.6	28° 25.1' x 84° 14.8'	
1615	33.9	34.30	27.7	28° 21.7' x 84° 17.8' N—11 N 1.1	53
1630 1702	34.4	34.45	27.7	28° 19.0' x 84° 22.4' NNW .52	63
1730				.21	km
1809	34.5	34.68	27.7	28°15.3' x 84°28.8' NNW 1.2	70 1.2
1914	34.5	34.91	27.6	28°10.5' x 84°33.4' NNW 1.2	75 1.2 1.2
1945				from NNE-SSW	
	WIND SPEED DUR W 20kn				
2005	34.4	34.86	27.5	28.07.4' x 37.3'	83
2046	34.7	34.90	27.3	28 05.4 ~~84~~ 40.29	90
2125	33.8 (corr 34.2)	34.01	27.5°	28 03.33 84 43.61 ~~35~~ 1.2	28
2208	(32.7)	33.14	27.5	28 04.43 84 46.3° 342 1.4	150
2255	32.6	32.97	27.45	28° 58.44' 84° 50.68	212m
0043	32.7	33.06	27.4	27°51.7' x 84°59.4'	311
0131	33.7	33.93	27.3	27°48.2 x 85°03.3'	364

(25)

Course? current

Time Z	δ_R	δ_S	T°C	Loc		depth m
✓ 0207	33.7	33.73	27.3	27° 44.5′ x 85° 05.7		427
✓ 0304	32.8	33.20	27.4	27° 39.2′ x 85° 09.9′		534
✓ 0407	33.7	33.61	27.2	27° 33.2′ x 85° 14.1′		744
✓ 0502	32.9	33.00	27.5	27° 27.7′ x 85° 16.7′		871
Sta 25						
✓ ~~0700~~	32.5	33.00	**27.5**	27° 22.27	85 19.77	SURFACE
?	35.8					25 m
	35.6					15 m
	35.3					8 m
	33.2					4 m
✓ 0855	33.5	33.27	27.4	27 22.87 ~~27° 22.34~~	85 11.65	816m
✓ 0915 STA 26	33.5	33.35	27.4	~~27° 21.99~~	~~85°~~ 09.09	766m
✓ 1100 STA 27	33.5	33.56	27.2	27° 22.1′ x 85° 02.5′		525m
✓ 1438 repeat 25?	34.3	34.58	27.4	27° 21.9′ x 85° 20.5′		1109m
1602 STA 24	35.6	35.62	27.0	27° 22.1′ x 85° 30.2′		2700m
~~2012~~ 2008	35.9	35.89	27.5°	27° 21.2	85 35.6	3245m
✓ 2200	35.2	35.43	27.6	27° 21.99	85 43.65	≈3200
1730 B/D						1.2
1800						
1830						1.0
1900						1.8
2000						1.5
2030						1.4
2100						1.2
2130						1.3
2200						1.1
2230						1.0
2300						.6

Ron & George



15 [illegible] 275

Depth	CAST	% Diff	m
1	[illegible] 36	9.2	.092 m
2	[illegible]	8.75	.0875
3	[illegible]	8.2	
4	33.15	8.0	
5	33.3	7.75	
6	34.4	4.5	
7	35.0	2.8	
8	35.1	2.5	
9	35.2	2.2	
10	35.25	1.8	
11	35.3	2.0	
12	35.4	1.7	
13	35.4	1.6	
14	35.5	1.4	
15	35.6	1.1	
16	35.6	1.1	
17	35.65	1.0	
18	35.7	.83	
19	35.7	.83	
20	35.75	.7 ?	
21	35.8	.6	

.68.6 .686 m .686

45 x 90 = 4050

$4050\ mi^2 \times 2.56 = 10368\ km^2$

$= 10.368 \times 10^9\ m^2 \times .686\ m$

$7.05 \times 10^9\ m^3$

~ 1 week [illegible] R ?

6/22 Time	S_R	S_s	T°C	Loc.	Depth m
0209	35.5	35.80	faucet	27°21.9' x 86°00.7'	1333
0425 STA 22	35.8	35.88	27.6	27° 21.6' x 86° 15.0'	3190
0715 STA. 21	35.7	36.02	27.75	27° 21.92 86° 35164 .4	3085
22 Sun 1631 STA 19	35.2	35.07	27.2	27°51.4 x 87°00 2 .4	2963
1830	34.2	34.13	27.5	27°52.8 x 86°46.3	2948
1848	34.1	34.25	27.3	275250 86°42 00	2952
2000	34.4	cast - 6 m ω angle of 20° [5.6] 142 .5			
"	36.2	" - 10 m ω angle of 40° [7.7]			
" surface STA. 18	33.7	34.11	27.9	27°51.2 x 86°35.7	3048
2355 STA. 17	34.0	33.88	27.5	27°50.6 x 86°15.2	3170
6/23/80					
0450 Sta 16 Surf					
Heavy rain	32.4	32.75	27.1	27 50.66 86°00 038 1.0	2925 m
pre wi pure 37.0 Sta 16					
0715 SURF	34.0	34.15		27° 50.84 85°40.90	ok
0825	34.0	34.19		27 50.73 85°4[illegible] .2 km	1023
Sta 16 Pore 34.9				27 50.73 85	cable more
1345 6/24 23	32.8	33.32		27° 51.12 85° 24.01 W	
1415 6/24		33.19		27° 51.03 88° 19.66	500
1500 STA. 13	surface 32.7	33.14		27°51.1 x 85°15.9	528
	4m - 32.7				
	7m 34.3			.1 Kn	
	10 34.0?				
	13 35.4				
	19 35.3				

Early 24 2 [illegible] 050 → 230 1 kn

28 10 [illegible] 49 → 320 .4

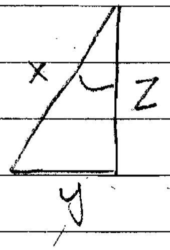
29 3 138 → 318 .4

6/22
0700 GMT 050 → 230 .5

1240 GMT 090 → 270 1.4

1545 138 → 318 .4

2000 142 → 322 .5



$\cos\theta = \frac{Z}{x}$

$x = \frac{Z}{\cos\theta}$; $Z = x\cos\theta$

0329 0.4 6/23

from 038 → 218 1 Knot

Sta 16

su

0100 038-215 .7 knot

1800-2000 6.6 km

-1900 little current

Time	S_R	δ_s	T°C	Loc	depth m
✓ 1738	32.5	33.14	28.1	27°50.7' x 85°09.2	
✓ 1805	32.7	33.02	28.2	27°50.7' x 85°06.7	405
✓ 1906	32.6		28.3	27°50.8' x 84°59.4	295
	Karst topography 1907 & 1913				
✓ 1944	32.5	32.87	28.4	27°50.8' x 84°54.5'	260
✓ 2025	32.6	32.94	28.6	27°50.7 x 84°49.5	210
2100	32.8	32.92	28.3	27°50.6 84°45.4	165
2150	32.7	33.17 Ron	28.4	27°50.9 x 84°39.6	140
2240	33.4	33.62	28.0	27°51.4 x 84°35.2	100
2314	33.0	33.74	28.2	27°51.6 x 84°29.8	75
2335	33.8 Ron	33.89	28.3	27°51.35 84°27.44	76
6/24 0040	34.0	34.19	28.1	27°50.8 x 84°19.7 (0000 115 .4)	75
0122	34.4	34.72 Michael	28.5	27°51.1 x 84°14.7 (120 .4)	75
0202	34.3	34.64	28.0	27°51.3' x 84°09.8 (040 .7)	65 m
0251	34.3	34.47	28.1	27°50.9 x 84°03.8 (030 010 .8)	60 m
(17) 0327	34.4		28.0	27°50.6 x 83°59.4 (033 020 1.0)	50 m

Ron Klemm

Time	δ_R	S_S	T°C	Loc.	Depth
0454	35.3	35.35	27.6	27°50.7 x 83°49.6'	85 m
0400				021 1.3	
0430				021 1.5	
0500				034 1.4	
0515				050 1.6	
0530		cast 38m			
0715	34.6			27 51.04 83 35.24	36
0530				075 1.0	
0600				066 1.1	
0630				066 1.1	
0700				069 1.2	
0730				098 .6	
0800				098 .4	
0620	34.6	34.92	28.0	27°50.26 83 40.76	
0715	34.6			27 51.03 83 35.24	
0745	35.0	35.27		27 51.06 83 32.18	
0-					
0905	35.5	35.69 ~~32.97~~	27.3	27°51.08 83.~~28~~.6	
0830				100° .5	
0850				091 .3	

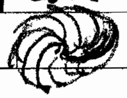
25 June 80

Drill core to be tested with divers.
10 foot core - max. is 25'.

Drill Station #1   27°50.96' x 83°02.05'
32' depth

Surface sample taken by divers → +++ P test

Surf Sand, shelly quartz sand   ~~Sand~~ ~~#2~~ coarse
with qtz 1/16 - 1/2   Coarse 1/2 +
shell & benthic forams   Med .25 - 1/2
White & black ~ 1mm   fine Sa 1/16 - 1/4
                 silt .1/16 - 256
[Note: top of core - muddy sed. is in part eroded from cores)



Archaias angulatus - reefal form ?
Peneroplis proteus ? Bahamian

Banded gray dolomite

a Cream - buff, calcareous cemented grain, yellowish in part .3mm - 1.0 X .3   P very faint

b. Peneroplis - proteus .6 black   P—

c. Vitreous phosphate grain 1.4 m   P very faint
aggregate of 15 μ particles amber - brown - buff

d Gray rounded spotted (microhole) aggregate P—
~~other~~ 1mm X 5 X 3 mm with some
mineral & organic (form) casts. .03 mm

e gray Peneroplis frag and with   P—
pores open

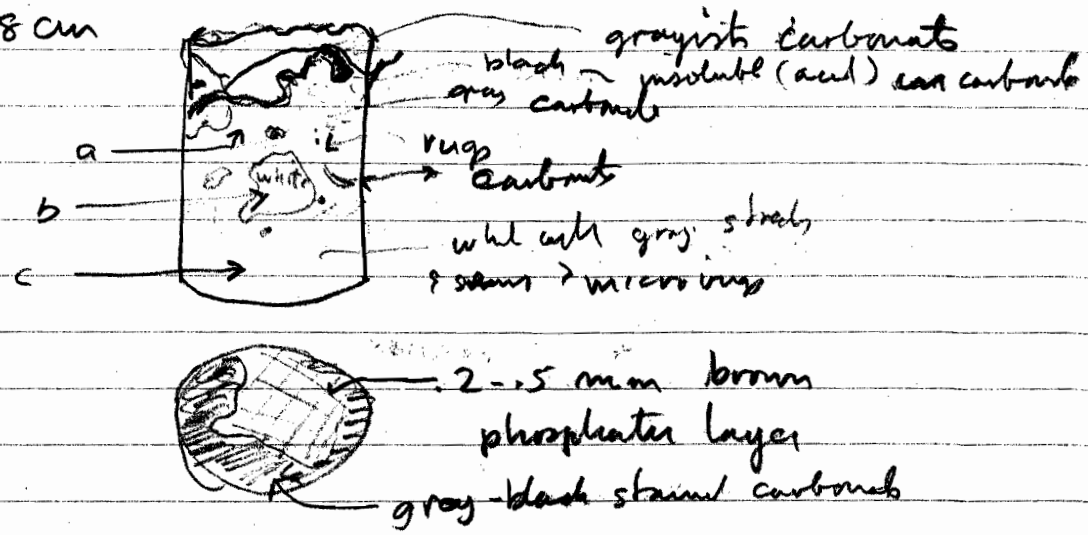
f amber vitreous grain plate gastropod   P+   P+

g amber gray white girdle. white spell [illegible] .2 m

H. Recrystal. pervasive grain? P – very faint? pores?

i Coral grn 2 mm P–

3–8 cm



Test on black material, possibly pyrite marcasite

Surface ~~black~~ & phosphate coated black-gray carbonate, with white & streaked carbonate below; ↓

a. Highly irregular corkelloid limestone with quartz grains (fine sand), & poorly sorted fine-med sand-size phosphatic grains; some bulk dolomite grains P+

b ~~Same~~ White pure carbonate

c) same as a)

8-14cm white cemented CS
with darker grains P+
bottom 5 dog
few quartz grains

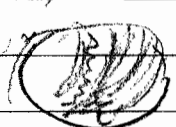
15-20 White speckled limestone, heavily
microrugula ~~with~~ : .1-5 mm. cavities
Very high rounded quartz grains
& phosphate grains P+
Cream-colored remains of regular carbonate
with no quartz P+

20-23 Hard buff ~~speckled~~ phosphatic (microrugulay)
limestone; top with rounded
qtz grains; bottom subrounded
Fragmented arcuate cavities;
Sand fine grained, as above & bladed-veg

23-25 As above, veined;
Veg are commonly chanmed channels
not molds of organisms

28-33 As above

33-36 aa 3 mm veg with bladed
wall



36-39 aa

40-43 Buff, sugary, (sparsely) micro rugulose dolomite with occasional phosphatic ~~speckles~~ ~~flecks~~ specks (rounded grains much denser than previous samples; Strong phosphate reaction

44-50 Very hard buff dolomite, sugary sparsely microrugulose, with specks of phosphate

50-51 aa buff-speckled

50-54 Hard microrugula sugary dolomite with fine-very fine quartz sand and phosphatic inclusions P+

~~54~~-58 aa

58-61 aa

Total core 61 cm

26 June 80 - Drill Site #2

Seas too high to try drilling.
Frank has had Theo make a dart corer out of pipe ~ 2½ feet long. Will try to punch a hole in strata @ drill site.

GC-2 Dart core 27°49.70 Drill Core Site 2
1950 83° [illegible] Core 1 [illegible]
Brown, fine silty-clayey foraminiferal mud with glauconitic streaks Core 2 3" of brown - gray plastic silty sediment
Depth 19 f P-

Sample Smith McIntire #1 27°51. P-
SM-3 whole sample 83 28 green fine sandy sed.
Green gray highly calcareous fine qtz sand, highly glauconitic
Sample Smith McIntire #2 27°50.44 sl silty
SM-4 Green gray silty, v. fine carbonate sand, minor qtz 83° 27.84 abundant gc grains
In fact 18 cm brownish gray graduated dolomitic to heavy clayey sand.
dark grains
one with Pt

samples 0-2 cm - P Green fine silty sd with qtz carbonate
2-5 cm - P V. fine silty carb. sand with qtz & large gc nuclei
5-8 cm - P - refine carb. sand
8-12 cm - P with dark stained carb. grains minor qtz
12-18 cm - P PA

Sample

SM-5

Drill Site #2 - Smith - MacArthur #3

27° 50.83 x 83° 31.25

Dark gray - ~~green~~ glauconitic sand, w/ black pebbles & hard carbonate, many benthic forams

Samples: some glauconite, scarce quartz

0-25 cm - P-

Bottom - P-

Summary

Piston Core Locations + Tests

	STA.	Pore W. Sp.	Loc:	Cl⁻ ‰	P	Length ft.
6/18	3	34.8	28°18' x 87°01'	19.5	-	22.5
"	4	34.7	28°18' x 86°49'	19.5	-	32
"	5	35.0	28°18' x 86°36'	19.5	-	32
"	7	35.1	28°18' x 86°12'	19.7	-	32
6/19	8	35.3	28°18' x 86°00'	19.5	-	21
"	9	35.5	28°18' x 85°47'	19.8	-	32
	24	35.4	27°22' x 85°30'	19.6	-	30
	26	35.4	27°22' x 85°09'	19.8	-	31
	27	35.4	27°22' x 85°02'	19.6	+	32 (2' Top kept)
	23	36.0	27°22' x 85°45'	20.5	-	20
	22	35.8	" x 85°15'	19.7	-	22
	21	36.3	27°21.4' x 86°36'	19.45	-	31
	20	37.0	27°22' x 86°60'	19.8	-	30
	19	34.3	27°51' x 86°00'	19.6	-	30
	18	32.3	" x 86°36'	19.3	-	24
	17	36.7?	" x 86°15'	>21	-	26
	16	37.0	27°50.4' x 86°00'	≥ 20.7	-	16
	15	34.9	27°51' x 85°46'	19.5	-	29
↓	14	35.3	" x 85°31'	19.8	-	35
↓	13	35.5	" x 85°16'	19.7	-	25
	1	35.2	28°59.8' x 88°05.4'			29
	2					

27 June 80

Water data en-route June 26

6/27 GMT	δ_S	Loc.		T°C	δ_R	Depth
0403	34.08	26° 45.28	84° 04.30	28°1	Ref 33.9	
0615	33.38	26° 24.83	84 11.45	28°3	Ref 32.9	170
0715	33.95	26° 16.10	84 15.79	28.2	Ref 33.6	183
0910	35.34	26° 00.02′	84° 23.85	28.5	35.0?	213 m
1010	35.43	25° 59.96′	84° 17.18′	28.3	32.5?	190m
1120	33.58	25° 59.97′	84° 10.19′	28.2	33.6	190m
AG30	34.62	26 00.02	83° 38.44	29.3	34.3	
17 ~~50~~	34.91	26 00.06	83 33.06	29.5	34.8	75m
1840	34.68	26 59.96	83 ~~28~~ 08	29.6	34.6	68
SUBSTD. WATER	34.839 ‰				~~34.0~~	
2000	34.39	25° 59.7	83 13.9	~~29~~.5	34.2	66
2200	34.98	25° 59.97	83 00.30	29.2	34.4	52
2300	36.01	26° 00.03	82° 55.34	29.3	35.8	40m

27 June 1980

Bomb grab sample (US I. Holloway Sample)

Bomb grab

Surface

Fine grain sand + silt w sea weeds

26° 00.03′ × 82° 55.34′

43 meter

P –

2348 6/27	36.23	26°00.07 × 82°49.72′	29.2	36.0	43m

28 June 80

Time	δ_A	δ_s	T°C	Loc.	Depth. m
0027	36.0	36.18	29.1	26°00.02' x 82°44.89'	40
Bomb	U.S. #2	32 m	0100 6/28		
Grab	26°59.96' x 82°40.90'			P -	
0125	36.2	36.40	29.2	26°00.0' x 82°38.12' end of line 11	30
0230	36.1	36.27	29.0	25°53.35 82 37.91	42m
0415	35.8	36.00	28.8	25 50.09 82 46.38	46m
0520	36.0	36.14	29.0	25 49.95 53.51	52m
0640	35.4	35.79	29.0	25 50.40 83° 3.17	56m
0825	35.0	35.05	28.8	25 50.03 15.78	65m
0940	34.2	34.52	29.3	25°49.99 x 83°24.93	71m
1050	34.7	35.21	29.2	25°50.07 x 83°32.23	78m
1140	34.4?	35.00	29.1	25°49.90 x 83°37.65	76m
1313	32.8?	34.68	29.1	25°50.12 x 83°46.18	90m
1405	33.9	34.16	28.8	25°49.98 x 83°49.77	115m
1456	33.7	33.91	28.9	25°49.90 x 83°55.41	127m
1542	33.7	33.71	29.3	25°49.87 x 84°00.75	140m
1621	33.6	33.63	29.1	25°50.04 x 84°05.32	145m
1702	34.6	34.69	29.5	25°49.85 x 84. 10.23	157
1755	35.9?	35.38	29.7	25°49.98 x 84°15.28	160
1847	35.5	35.48	29.6	25°50.15 x 84°21.08	188
1920	35.3	35.45	29.6	25°50.18 x 84°25.22	208
1958	35.4	35.65	29.8	25°49.98 x 84°30.09	227
2039	35.8	35.95	30.1	25°50.05 x 84°35.26	377

U.S. Bomb Grabs

U.S. #3 Course gray-brown sand w black + white inclusions 0300 C/28 25°50.39 x 82°38.04'
P —

#4 Fine grain gray-green sand + silt
25°49.98 x 82°52.01 50 m
P —

#5 Course grain brown-gray sand with some silt and large white + black inclusions
25°50.44 x 83°05.30
P —

#6 Very small sample — not representative

#7 Medium grain brown sand with some very fine brown sand with small black inclusions. Contains large shell and coral fragments.
25°50.1 x 83°33.8 — ~~80~~ m.
P —

#8 — No Sample

#9 + 10, 11 — No Sample — too deep

#11 29 June 60 1055 Z 25°40.03'N x 83°36.12W
82 meters — Fine grain green-gray sand and silt, small white shell fragments, few dark specks.

#12 25°40.4 x 83°18.2 62 m. P —
Course shell + coral fragment sediment w small % fine silt — relict overtaken type weather swimming around P —

see p. 31 for cont.

28 June Speed & curr. dir.

0408 - 0430	.036	→ 216	.9kn
530 - 0600		0	0 kn
706 - 730	110 - 290		1.1 kn
0730 - 800	030 - 210		.9

Waters

Time	δ_R	δ_S	T°C	Loc	Depth-m
2122 28 June	35.2?	35.76	30.2	25°50.10 x 84° 40.62	746
2203	34.5	35.41	30.0	25°50.01 x 84° 45.99	1163
2330 end line 3	35.3	35.42	29.7	25° 50.19 84°57.06	3329

Currents 2200 - 233, 107 - 1.4 knot

29 June 80

0121	35.6	35.60	28.7	25° 39.95 x 84° 57.98	3343 M
0232	35.3	35.32	29.2	25° 40.06 x 84° 49.16	1500
0306	35.2	35.36	29.2	25° 40.04 x 84° 44.74	1200
0338	35.3	35.32	29.1	25° 39.99 x 84° 40.09	950 m
0408	35.6	35.69	29.2	25° 40.08 x 84° 35.70	619 m
0520	35.8	36.07	29.2	25° 40.10 84° 25.79	285 m
0645	34.7	34.98	29.3	25° 40.18 84 12.42	170 m
0730	33.7?	35.65	28.8	25° 40.0 84° 05.53	149

June 28 1700 320 → 140 .8 knot

1830 010 → 190 .6 knot

current & directions

June 29

0430	170 → 350	.3 k	0600	190 - 010 .6
0500	180 360	.4	0630	175 - 355 .6
0530	180 - 360	.5 k	0700	210 - 030 .8
			0730	240 → 060 .8

(11)

Time	Ref. ‰	Sal ‰	T °C	Loc	Depth
0835	33.8	33.95	29.1	25° 40.15 x 83° 56.43	136 m
0918	34.2 ?	34.69	29.2	25° 40.33 x 83° 49.78	115
0950	35.0	34.98	29.5	25° 40.20 x 83° 45.45	103
1025	35.0	34.94	29.5	25° 39.97 x 83° 38.22	87
1118	34.4	34.54	29.4	25° 40.00 x 83° 33.47	78
1147	34.4	34.52	29.4	25° 39.93 x 83° 28.95	74
1248	34.6 ?	34.96	29.6	25° 39.97 x 83° 19.26	67
1354	35.3	35.25	29.5	25° 39.97 x 83° 10.07	54
1513	35.7	35.83	29.6	25° 40.06 x 82° 59.70	47
1652 end line 15	34.8	35.13	29.4	25° 38.96 x 82° 49.10	41

Currents — Local Time

0400 - 0430	298.6°	.8	~~29~~ June
430 - 0500	210.5	.8	
500 0830	232.2	.5	
0830 - 0600	221.2	0.5	plotted
0600 - 0630	222.0°	0.7	

1822	35.2	35.34	30.3°	25° 29.98 x 82° 50.71	43m
1944	35.0	35.29	31.1°	25° 30.41 x 83° 01.35	50 m
2045	34.5	34.72	30.8°	25° 30.06 x 83° 08.87	54m
2145	34.5	34.75	30.4	25° 30.04 83° 17.37	59
2330	34.6	34.79	30.7	25° 30.07 x 83° 30.22	68
30 June 0057	34.2 ?	34.49	29.9	25° 29.90 x 83° 41.93	82
0158	33.9	34.49	29.9	25 29.89 83 50.98	108
0318	33.6	33.67	29.7	25 29.00 84 01.93	137
0430 (R)	34.7	34.76	29.7	25 29.50 84 10.48	164

U.S. Bomb Grabs (cont'd)

#13 Gray-greenish med-fine sand, many black specks with a few white fragments.
25° 39.95 x 83° 05.65 Depth 60m
P –

#14 25° 39.88 x 82° 52.15 depth 43m
Fine-med greenish-gray sand w small black specks.
P –

see p35 for continuation

Course location June 29

20	1600	125-305 .7	
20½	1630	100-280 1.2	plotted
21	1700	160-340 1.3	
21½	1730	170-235 1.4	
22	1800	185-345 1.6	
	1830	gelling current N 1kn	
23	-1900		

steer made
2030 -2200 271 269 7.5

Lun 1 183° 45' sudden ~~current~~
current to N

speedometer
Pitot static tube bottom of hull

Time	Spcf	δ_{sgt}	T°c	Loc	Depth
GMT 30/80					
0540	34.3	34.63	29.5	25° 29.80 89° 20.36	57 m
0640	35.16	35.66	29.3	25° 30.08 28.36	366

Bridge

Lat - Long calc corrected to grid

GMT

2340 - 0200	069 - 249	.5	June 30
0200 - 0330	057 - 237	.6	
0430	022 - 202	.5	
0500	040 - 220	.3	
0530	124 - 304	.2	
0600	177 - 003	.4	megula
0630	105 - 288	.4	
0700	090 - 270	.2	

0800	35.0	35.5	29.0	25° 30.02 89° 39.13	
1438	34.2	34.48	29.4	25° 18.05 x 84° 19.71	
1549	33.8	34.13	29.1	25° 17.81 x 84° 09.92	
0925 2nd line	35.3	35.47	28.7	25° 27.88 x 84° 47.61	200 m
1035	35.0	35.22	28.5	25° 20.92 x 84° 46.83	~1000 m
1707	33.7	34.17	29.4	25° 17.23 x 83° 58.95	128 m
1825	34.3	34.48	29.6	25° 17.77 x 83° 48.43	105 m
1932	35.2	35.11	29.7	18.05 39.59	75 m
2157	35.1	35.30	29.3	25° 17.97 x 83° 20.86	62
2323	35.3	35.51	29.7	25° 18.10 x 83° 10.16	57

1 July 80

Time	δ_R	δ_S	T°C	Loc	depth m
0007 end line 19	35.0	35.19	29.2	25°17.80 x 83.04.97	55 m
0153	35.4	35.29	29.6	25° 10.00 x 83°10.66	57 m
7/1/80					
0430	34.3	34.73	29.2	25 09.96 83 30.70	69 m
0605	34.3	34.83	29.2	25 09.88 83 41.92	82 m
0730	33.8	34.00	29.0	25 09.91 83 52.79	115 m
1419	35.5	35.66	28.7	25° 08.52 84°45.29	~3400 m
1537 line 23	35.4	35.59	28.6	24° 59.98 x 84° 40.20	3375 m
1710	35.2	35.49	29.2	24° 59.95 84 27.96	1875
2010	34.0	34.26	29.4	25 00.06 04.75	190
0840	33.6	33.80	28.8	09.52 02.59	140

CURRENT MEASUREMENTS

0400	0400-0430	298.6°	0.8 KNOTS
0430	0430-0500	210.5°	0.8 "
0500	0500-0530	232.2°	0.5 "
0530	0530-0600	221.2°	0.5 "
0600	0600-0630	222.0°	0.7 "

1005		34.1	34.34	28.9	25° 10.01 84° 12.79	160
1107		34.0	34.37	29.1	25° 10.00 84° 21.09	410
22:37			34.43	29.5	24° 50.54 x 84° 10.31	390
0950	July 2		34.28	28.6	24° 50.29 x 83° 50.89	75
1046			34.63	28.9	24° 45.97 x 83° 53.75	186
1148			34.65	28.9	24° 41.30 x 83° 58.90	900
July 3	0510	35.3	35.61	29.2	25° 00.01 83 04.67	52

7/1

TIME — Plotted on table

LOCAL	GMT	COURSE STEERED	SPEED BY ENGINE	COURSE MADE GOOD	SPEED MADE GOOD	SET FROM/TO	DRIFT
0000	0400	270	7.2	269	6.8	286/106	.4
0030	0430	270	7.2	270	6.8	270/90	.4
0100	0500	270	7.2	270	6.6	270/90	.6
0130	0530	270	7.2	270	6.6	270/90	.6
0200	0600	270	7.2	268	7.0	320/140	.3
0230	0630	269	7.2	266	7.2	357/177	.4
0300	0700	274	7.2	268	6.8	332/152	.8
0330	0730	282	7.2	274	7.4	019/199	1.0

U.S. Bomb Grabs (cont)

#15 25°29.95' x 82°52.03 52 m
Fine gray-green sand with small black specks - very homogenous
P -

#16 Medium - fine gray-green sand with white + black specks - some large shell fragments 25°29.82 x 83°05.28 75 m
P -

#17 Mixed greenish brown fine sand with ground shell hash. 25°30.03 x 83°17.80 58 m
P -

#18 Light brown fine shell hash. 25°29.97 83°36.44 - 71 m
P -

#19 Light brown (Tan) medium shell hash with small amount of fine silt. 25°18.12 x 83°36.42 70 m
P poss. Trace

#20 Grayish-brown shell hash with medium - fine sand. 25°18.3' x 83°18.3' 60 m
P poss. Trace

#21 Medium shell hash with gray-greenish sand, many black specks. 25°18' x 83°06' 53 m
P -

#22 medium - fine gray-green sand with black specks & few large shell
25° 10.59' x 83° 05.65' 70 m
P - green reaction w/ wolfed black specks

#23 25° 10.05' x 83° 18.21' 55 m
medium - fine shell hash w/ small amount of fine sand (echinoderm ex Enemy - brittle star?)
P -

#24 Mixture of medium - fine shell hash and fine light brown (tan) sand. [chunck of red coral].
25° 10.03' N x 83° 36.85 W 70 m
P -

CONCEPT OF CALIBRATION CURVE, TITRATIONS → SALINITY

S_v = wt/vol. units (g/l) $\quad d$ = density at oper. temperature

S_w = wt/wt unit (g/kg) = Salinity } We can measure only volume

$\frac{S_v}{S_w} = d \qquad S = 1.806 \times Cl\ ‰$

To obtain approximate direct calibration curve
Choose fresher water and standard sea water
determine S salinometrically (Bisset Berman)
and by titration. Plot on suitable graph.
Although points should be slightly curved a straight
line for small differences will be approximately
correct. We must further assume that
relationship S/Cl is constant. This will
hold for ocean waters but not necessarily
for pure waters. These should be checked at
lab if possible

Further if we wish to run higher samples than
curve (straight line) allows we may run them
salinometrically and by titration to extend curve.
High sal. may be obtained by evaporating sea
water.

LINE 1 Delta – 88°44', on 29°
LINE 2 N 88°44' to 30° 09'
LINE 3 FROM LINE 2 to 29°01 88 07.8' Core 1
LINE 4 FROM CORE 1 to 87°37.5', 30°07
S. of Mobile Bay
Line 5 From 4 to Core 2 at 87°37.5, 29.00
MANHEIM LINE FROM Core 2 to

TARGET 84° 10'
24 51.9

2 mi Lag 83 54
24 46

2 July 1980

Dredge line #1

		Time	Loc.	depth m
Haul #1	over board	0107Z	24° 48.26' x 84° 12.49'	850
	on bottom	0124Z	24° 48.16' x 84° 12.23'	875
	off bottom	0155Z	24° 48.20' x 84° 11.73'	875
	on board			

Superficial Gray brown - very fine sediment (clayey) with lumps of clay. Few organisms, one coral-like structure.

Paleo wash Sand ~ 30%, many siliceous particles (spicules etc.)

P sediment - P clay -

Paleo - Tentative Pleistocene → recent

Line #1

Sand #2 — Incorrect

On bottom 24° 49.32 × 84° 11.71' 530m
Off bottom 24° 55.84 × 84° 11.67' 460m

Grayish-green sandy sediment

Exclusions - brittle stars, few shell, "klinker"

Paleo wash - carboniferous + siliceous tests and spicules

P sed. -

Paleo - Pleistocene → recent.

Dredge line # 1 – Haul #3

	loc	depth
On bottom	24° 54.63 x 84° 05.21	212 m
Off bottom	24° 55.00 x 84° 04.70	180 m

Lost dredge @ surface - cross bar broken.

Rocks in dredge appear to be globular, tan phosphorite?

↑ NO →

Line #1 - Haul #4

New Dredge (claw type clam dredge)

On bottom	24° 54.51 x 84° 05.51	220 meters
Off bottom	24° 51.97 x 84° 04.85	205 meters

Algal Reef Rocks - Carbonate Rubble

Separated into catagories:

1. New Material
2. Nodular
3. Worn Nodular
4. Weathered
5. Organic Stained

P -

Paleo Pliestocene → recent forams

Line #1 — Haul #5

On Bottom: 24° 54.90' x 84° 04.80 205m
Off Bottom: 24° 55.10 x 84° 04.65 178(m)

Carbonate algal Reef material
"rocks" + 2 plate forms.
Representative collection made.

P small plate: black stain ~~ +
brown stain ~ + shells? or Fe oxide spit.
A nodule: black stain =
brown stain -

Paleo Pleistocene → recent

Line #2 - Haul #1

On bottom 41.30 59.26
Off bottom 24° 41.49 x 83° 59.33 735

2000 lb. pull 24° 41.42 x 83° 59.28 787.5 meter

Greenish-gray clay -

Dredge Wash - shell hash with a few organisms

P sed -

Line #2 – Haul #2

On bottom	24° 41.98 x 83° 59.10	625m
Off bottom	24° 42.25 x 83° 59.01	546

Tug @ 24° 42.26 x 83° 58.99

Greenish-gray sandy shell hash

Large piece of brown coral (Tubular)

Piece of Fresh sheared carbonate outcrop

Paleo – weather side of carbonate – brachiopods

P sediment ~ ~ +
P clean shear ½ +
P black + brown staining –

P brachiopod shell –

Paleo. Calcified worm tubes, agglutinated annelid tubes with mm-sized material (sponge spicules, forams, grains – obviously a sampling of sediment at bottom) Coral surface seems recently dead, not heavily bored nor over 50% covered with epibionts. Coral fragment not greatly abraded & rounded – not transported very far. [Descriptions of Coral Fragment – Scott Brande]

Dredge Line #2 - Haul #3

On bottom	24°42.68 x 83°57.45	463 meters
Off bottom	24°42.79 x 83°57.38	460 meters
Tugs @	.92 .27	420 meters

hung up on bottom @ raising

Dredge mangled beyond repair!

Few pieces of sheared carbonate material shells + organisms.

P fresh sheared pebble ½ +
P stain pebble (nodule) ~~ +
P brown surface ~~ +
P black surface ~~ +

3 July 80

Tortugas Drill site #1

24° 40.35' x 83° 05.00'

Drill to be deployed in 17 meter of water with divers and video camera equipment.

Current .3 kt 217° → 53'

Camera housing leaked.

Drill bit plugged - not enough water pressure - No Core.

Flatrine June 30

0000	Cstr	Sp	CMG	SMG	Set	Drift
0030	272	7.0	268	7.2	022/202	.5
0100	272	7.0	270	7.2	040/220	.3
0130	272	7.0	273	7.2	124/304	.2
0200	272	7.0	275	7.0	177/003	.4
0230	270	7.0	271	7.1	108/288	.4
0300	270	7.0	270	7.2	090/270	.2
0330	269	7.0	268	7.2	056/236	.2
0400						

N

July 3 1980

	LOCAL	GMT	COURSE STEERED	SPEED BY ENGINE	COURSE MADE GOOD	SPEED MADE GOOD	SET FROM/TO	DRIFT
25°00.1 83°12.3	0000	0400	101	6.6	090	5.8	151/331	1.4
25° 83°8.91	0030	0430	098	6.6	090	6	149/329	1.1
25° 83°05.47	0100	0500	098	6.6	090	6	149/329	1.1
24°58.2 83°4.88	0130	0530	182	6.6	183	5.8	174/354	.8
24°55.6 83°4.75	0200	0600	178	6.6	177	5.2	181/001	1.4
24° 83.4.6	0230	0630	180	7.0	177	6.0	197/017	1.1
24°49.2 83°4.55	0300	0700	181	7.25	178	6.8	218/038	.6
24°46.0 83°4.81	0330	0730	186	6.9	184	6.4	210/030	.6

3 July

Time	S_R	S_S	T°C	Loc.	Depth m
0800	36.0	36.15	29.3	24°42.78×83°04.76	50
1002	34.4	34.83	29.1	24°30.37×83°04.71	40
1128	34.4	34.81	29.2	24°20.09×83°04.52	290
July 4 0055	34.5	34.94	29.5	24°24.47×82°59.56	100m
0225	34.4	34.66	28.4	24°21.60×83°08.52	58m
0600	34.2	34.53	29.2	24°[illegible].32 83 29.88	245
0645	34.3	34.73	29.0	24 34.97 83 23.70	60
0730	34.2	34.51	29.3	24 [illegible].63 83.2575	60
0830	34.2	34.60	29.2	24 45.81 83 23.47	64m
1005	34.7	35.00	29.2	24° 41.97'x 83°16.15'	60
1144	35.0	35.15	29.3	24°35.41'x 83°06.38'	36
1430	35.2	35.30	28.9	24°25.11 x 82°51.85	53

July 9, 1980

TIME LOCAL	TIME GMT	COURSE STEERED	SPEED BY ENGINE	COURSE MADE GOOD	SPEED MADE GOOD	SET FROM/TO	DRIFT
0000	0400	287	7.25	286	6.4	294/114	.9
0030	0430	293	7.25	291	6.6	312/132	.7
0100	0500	292	7.25	289	6.0	306/126	1.3
0130	0530	293	7.25	291	6.6	312/132	.7
0200	0600	Various		Undetermined			
0230	0630	022	7.25	024	6.8	356/176	.5
0300	0700	021	7.25	022	6.8	006/186	.5
0330	0730	021	7.25	019	6.6	049/220	.7

83 18.94
24 24.32
~~24 28.19~~
~~82 56.60~~
24 25.47
83 22.46
24 26.57
83 22.46
24 28.89
83 28.62
24 33.49
83 28.42
24 36.80
83 27.03
24 39.60
83 25.76

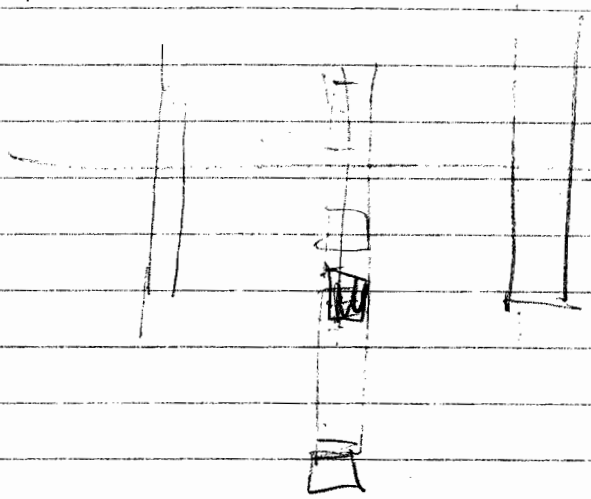
Rockwell
Paul Schenck
[illegible]
[illegible]
Scott Brooks [illegible]
[illegible]

Tommie Gayton ABs
Jeff Jackson
Larry Tomlinson

Dick ~~Gibson~~
Ilse

35.5 24 13.3 GMT 7/4/80
81 44.0 1004

35.1 24 30.42 7/5/80 GMT
80 44.83 0352



TASKS

BRING UP SALINITIES
GET LINE DESIGNATIONS & TIMES FOR
TRANSECTS FOR ACOUSTICS

At Woods Hole

Redo chlorides on pore water → Chlorobenzene

Report to Larry Doyle

~~Order bottles for Theo~~

Pick up Samples on Gyre - Aug.

(1) Sediments 2 boxes in Fan Tail Frig.
(2) Dredges - Lounge
(3) Box - Lounge

From Front

- Copy of Report
- Select Quotes of Theo Dues

→ Sign any cruise Forms ←

200 Extract surface water – salinity
26 cores 22 pore water extractions (piston cores)
5 box cores – 19 samples + discription
5 Smith-MacIntyres Grabs – 10 samples + discrip.
24 Under Way Samples – 24 " "
8 Dredge hauls – 13 " "
106 ~~88~~ Phosphate indication tests
~~88~~ 88 Cl^- titrations
~~12~~ 12 Mini hydro casts
2 Drill cores – 15 samples + discriptions

3507.7 Km Total (3.5) (~2100 mi)
3292.0 Km Mini Sparker
70 sample sites
Course plotted + recorded every 15 min.

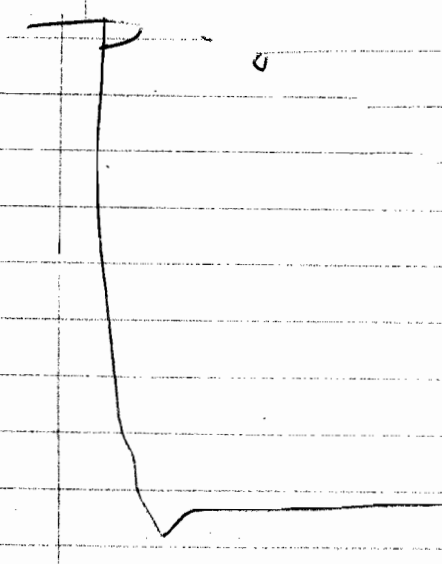
Seismics

~~Seismics~~

(1) 3.5 KH
Recorder

(2) 800 joule 8 min sparker

The 100 - Michael Hart



Dive

	Time	Depth	Loc	Note	Age?
(1)	2133	~~Ucr~~		U. Mio?	45 / .6 / 27.0
(A) (2)	2140 / ~~2~~ 138 / 2135 / 2142.5	200m	24 54.78 84 05.12 / ~~24 55.66 84 04.0~~ (24 54.9 / 84 04.9) / 55.29 84 04.56 / Pre dredge target / 24° 54.55 / 84 05.40	M. Mio	44 / 12 / 56 / 16 / 33.6
(3a)	2152, 55			New Start pt 54.78 N / 84 05.1	
(3a)				(54.8 / 84 05.15)	
(3b)					
(4.)	2213			Oligo?	
(5)	2223				
(6)	2234)			Pinnacle / L. Cret Reef?	
(6a)	2235				
(X) (8)	2240} / 2245} / 2242 - 3.5 / Bring down 10.27 / 10.32 / off Bottom 1051	505 515 / Bott ~10:32 515 / 440	24 49.69 84 11.33 / 24 49.27 84 11.84 / (49.42) (11.66)	LC.	51 / 7 / 357 ; .7 92 68 / 7 28 / 294 82
(A) (8)	2246	850 / ~835 / off 810		LC.	

922 HIT 926 pitched up for 2 1/2 kt.
939 move to 940 off bottom 830 m

Dredge Sta 2

Botten R52 214-208 m

Fiskeabont 112

87.05

19.376 g/oo Cl^-

23 June Cl^- 0.5 ml sample $AgNO_3$

Blk.	0.003 ml			Cl	mean		
STD.	0.003 - 0.841	= 0.838					
STD	0.841 - 1.781	= 0.940	2	missed pipet must be 1.6			
STD.	0.000 - 0.836	= 0.836					
STD	0.836 - 1.675	= 0.839					

Pore waters

STD.	0.000 - 0.836	= (0.836)					
STA. 1	0.836 - 1.696	= 0.860	19.38	19.54	19.82	19.5	
"	0.000 - 0.828	= 0.828	19.26		19.23		
STA. 2	0.828 - 1.666	= 0.838	19.42	19.42	19.41	19.4	
"	0.000 - 0.838	= 0.838	19.42				
STD.	0.860 - 1.700	= (0.840)					
STA. 3	0.000 - 0.836	= 0.836	19.38	19.46	19.37	19.5	
STA 3.	0.850 - 1.696	= 0.846	19.54		19.56		
STA 4	0.000 - 0.842	= 0.842	19.48	19.48			
STA. 4	0.860 - 1.702	= 0.842	19.48		19.47	19.5	
STD.	0.000 - 0.833	= (0.833)					
STA. 5	0.850 - 1.693	= 0.843	19.48	19.46	19.50	19.5	
STA. 5	0.000 - 0.839	= 0.839	19.44		19.43		
STA. 7	0.860 - 1.719	= 0.859	19.74	19.67	19.80	19.7	
STA. 7	0.000 - 0.850	= 0.850	19.60		19.63		
STD.	0.870 - 1.706	= (0.836)					
STA. 8	0.000 - 0.841	= 0.841	19.46	19.47	19.46	19.5	
"	0.860 - 1.702	= 0.842	19.48		19.48		
STA 9	0.000 - 0.854	= 0.854	19.66	19.72	19.70	19.8	
"	0.870 - 1.732	= 0.862	19.79		19.84		
STD.	0.000 - 0.834	= (0.834)					

19.376

STA 13 SURF 0.769 33.14 = 18.35

$S = 1.806 \times Cl$

$Cl = \frac{S}{1.806}$

5/3 = 1.666

STD: IAPSO 19.376/00

Doyle
Core catcher

Cl^- 29 June 80

Sample 0.5 ml
$AgNO_3$ 4/100

sample	START ml	finish =	Δ		
BLK.	0.000	0.001 =	0.001		
STD.	0.010	0.820 =	0.809		
STA	0.850	1.658 =	0.807		
STD.	0.000	0.810 =	0.809		
STA. 13	0.840	1.659 =	0.818	19.58	19.7
" (0.3ml)	0.000	0.499 =	0.499 corr = .831	19.95	
STA 14	0.520	1.344 =	0.823	19.76	19.8
STA "	0.000	0.825 =	0.824	19.80	
STA.	0.850	1.659 =	0.808		
STA. 15	0.000	0.810 =	0809	19.44	19.5
" (0.3ml)	0.830	1.320 =	0.489 corr = .815	19.575	
STA 16	0.000	0.867 =	0.866	≤ 20.79	≤ 20.7
"	0.880	1.744 =	0.863	≤ 20.70	
STD.	0.000	0.807 =	0.806		
STD.	0.000	0.806 =	0.805		
STA. 17	0.820	1.763 =	0.942	> 21	> 21
" x	0.000	0.939 =	0.938	> 21	
STA 18	0.960	1.762 =	0.801	19.24	19.3
STD.	0.000	0.806 =	0.805	19.34	
STA. 19	0.840	1.654 =	0.813	19.54	19.55
"	0.000	0.815 =	0.814	19.56	
STA. 20	0.830	1.659 =	0.828	19.84	19.8
STA. 20	0.000	0.822 =	0.821	19.72	
STD.	0.850	1.656 =	0.805	19.34	
STA. 21	0.000	0.811 =	0.810	19.46	19.4
"	0.830	1.637 =	0.806	19.36	
STA. 22	0.000	0.820 =	0.819	19.67	19.7
over "	0.850	1.674 =	0.823	19.76	

	START	End	A		
STD.	0.000	0.806 = 0.805			
STA. 23	0.850	1.712 = 0.861	0.861	0.861	20.49 (5)
"	0.000	0.862 = 0.861			
STA. 24	0.870	1.690 = 0.819	0.817	0.817	19.6
"	0.000	0.817 - 0.816			
STD.	0.830	1.637 = 0.806			
STA. 26	0.000	0.816 = 0.815	0.818	0.818	19.8
"	0.830	1.652 = 0.821			
STA. 27	0.000	0.818 = 0.817	0.816	0.816	19.6
"	0.830	1.646 = 0.815			
STD	1.000	1.810 = 0.809			

Cl^- sampler STD. 0.5 ml $AgNO_3$ 4/100

Hydro Casts @ Piston Core Stations

Sample	START	ml's end	Δ		Cl	S.
B/k.	0.000	0.001	= 0.001			
STD.	0.010	0.825	= 0.814			
STA	0.840	1.657	= 0.816			
STD.	0.000	0.813	= 0.812			
STA. 25 4 m	0.830	1.595	= 0.764	18.24	18.30	33.05
"	0.000	0.770	= 0.769	18.36		
STA. 25 8 m	0.790	1.610	= 0.819	19.52	19.51	35.24
"	0.000	0.819	= 0.818	19.50		
STD.	0.830	1.644	= 0.813			
STA. 25 15 m	0.000	0.821	= 0.820	19.54	19.54	35.29
STA 25 25 m	0.840	1.683	= 0.842	20.04	(20.02)	36.16
"	0.000	0.841	= 0.840	20.00		
STD.	0.860	1.670	= 0.809			
STA. 18 6 m	0.000	0.793	= 0.792	18.88	18.92	[redacted]
"	0.800	1.596	= 0.795	18.96		
STA. 18 10 m	0.000	0.824	= 0.823	19.60	19.60	35.40
"	0.840	1.664	= 0.823	19.60		
STD	0.000	0.814	= 0.813	19.37		
STD	0.000	0.812	= 0.811	19.33		
STA. 13 Surf.	0.820	1.591	= 0.770	18.38	18.35	33.14
"	0.000	0.769	= 0.768	18.33		
STA. 13 4 m	0.780	1.554	= 0.773	18.44	18.47	33.36
"	0.000	0.776	= 0.775	18.50		
STD	0.790	1.60[illegible]	= 0.810			
STA. 13 7 m	0.000	0.806	= 0.805	19.18	19.17	34.52
"	0.820	1.624	= 0.803	19.14		
STA. 13 10 m	0.000	0.798	= 0.797	19.00	19.01	34.33
" (0.3 ml)	0.810	1.290	= 0.479	cm .798	19.02	
STD.	0.000	0.810	= 0.809			
STA. 13 13 m	0.820	1.661	= 0.840	20.00	19.89	35.92
"	0.000	0.832	= 0.831	19.78		
STA. 13 19 m	0.850	1.676	= 0.825	19.65	19.65	(35.45)
STD	1.000	1.814	= 0.813	19.37		

CONVERSION CURVES

TITRATION UNITS — Cl

ASSUMPTION: Density = 1.0 Sea water admixtures

Cl, (true)

SAMPLES PISTON CORE
STA 17, 16 Not valid
because no calibration
point in higher range
Need addl

HYDROCAST

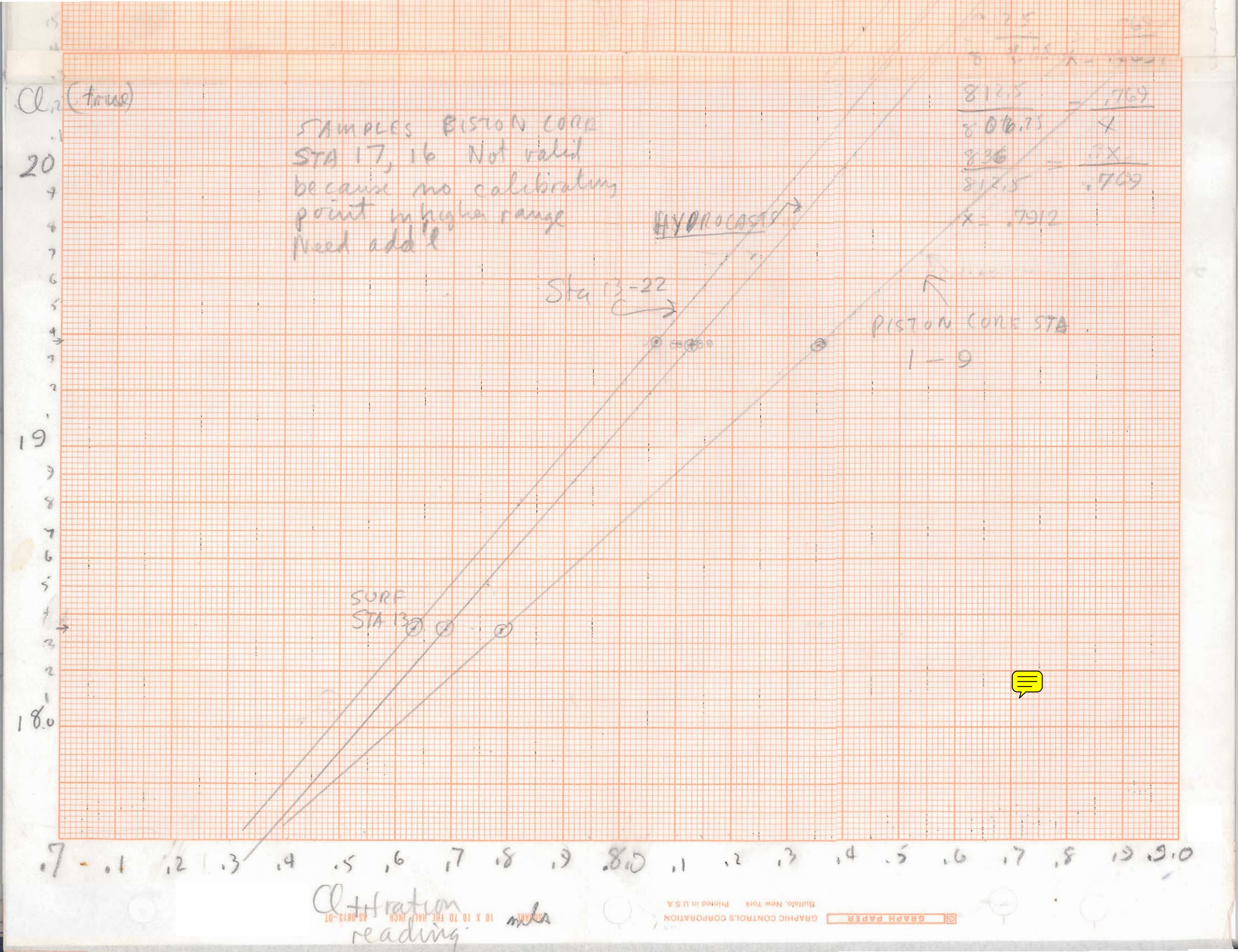
Sta 13-22

PISTON CORE STA
1 — 9

$\frac{812.5}{806.75} = \frac{.769}{x}$

$\frac{8.96}{812.5} = \frac{.7x}{.769}$

$x = .7912$


Cl2 (true)
SAMPLES PISTON CORE
STA 17, 16 Not valid
because no calibration
point in higher range
Need add'l
HYDROCAST
Sta 13-22
PISTON CORE STA.
1-9
SURF
STA 13
20
19
18.0
.7
.9
Cl titration
reading

P - STA 1. Cl⁻ 19.5

P - STA 2. Cl⁻ 19.4

core length

PISTON Cores

STA. 3

22.5' catcher sed. P = — / pore H_2O S 34.8 Cl⁻ 19.5
Surf 36.0

STA 4

32' catcher sed. P = — pore H_2O S 34.7 Cl⁻ 19.5
surface 35.6

STA 5

32' P = — pore H_2O S 35.0 Cl⁻ 19.5

STA 6

— No Sample — catcher washed out

STA. 7

32' P = — pore water S = 35.1‰ Cl⁻ 19.7
— discard

STA 8

21' P = — pore water S = 35.3 Cl⁻ 19.5

STA 9

32' P = — pore water S = 35.5 Cl⁻ 19.8

STA 10

No Sample saved for pore water - cc washed

STA 11

No Sample — catcher washed

PISTON CORES (catchers)

Length ft. G80-6 Doyle Line #3

STA 25

No Sample

STA 26

31' P = − pore water $\delta^{0/00}$ = 35.4 vial was up Cl^- = 19.8

32' P = + STA 27 pore water $\delta^{0/00}$ = 35.4 vial was up Cl^- = 19.6

30' P = − STA 24 pore water $\delta^{0/00}$ = 35.4 Cl^- = 19.6

20' P = − STA. 23 pore water $\delta^{0/00}$ = 36.0 Cl^- = 20.5

22' P = − STA 22 pore water $\delta^{0/00}$ = 35.8 Cl^- = 19.7

31' P = − Sta 21 pore H_2O S ≈ 36.3 vial used w/s Cl^- = 19.4

30' P = − STA. 20 pore H_2O $S^{0/00}$ 37.0 Cl^- = 19.8

30' P = − STA. 19 pore H_2O $\delta^{0/00}$ = 34.3 Cl^- = 19.6

24' P = − STA. 18 pore water $\delta^{0/00}$ = 32.3 Cl^- = 19.3

26' P = − STA. 17 $\delta^{0/00}$ (36.7?) Cl^- = > 21

16' P = − STA 16a 37.0 Cl^- = ≥ 20.7

29' P = − Sta 15 34.9 vial used w/s Cl^- = 19.5

Piston Cores (catcher)

low length ft

6-80-6

35' P = —

STA. 14
pore water $\delta^{37}Cl$ = 35.3 Cl^- = 19.8

25' P = —

STA 13
pore water $\delta^{37}Cl$ = 35.5 Cl^- = 19.7 vial used up

32

STANDARDIZE Sub STD S.W.

IAPSO - 19.376 ‰ Cl⁻ 35.0037 S C.R. 1.00009

IAPSO -	null set @ 1.00009		STD setting	5.58
IAPSO -	1.00019	reset null @ 1.00009		5.63
IAPSO -	1.00024	" "	"	5.68
IAPSO -	1.00019	" "	"	5.73
IAPSO -	1.00034	" "	"	5.835
IAPSO -	1.00029	" "	"	5.915
IAPSO -	1.00026	" "	"	5.980
IAPSO -	1.00034	" "	"	6.080
set w/5 min IAPSO -	1.00016	" "	"	6.13
IAPSO -	1.00055			
1 min	1.00054			
2 min	"			
5 min	"			
15 min	1.00053	" "	"	
IAPSO -	1.00129	" "	"	6.66

Sub STD.	(0.98344)
" "	0.98354
" "	0.98364 - drained
Refill Std.	0.98354 - drained
New Std.	(0.98330)
6 T/.	0.98360
"	0.98370 - drained
"	0.98376 - drained
"	0.98386 - drained
refill Std.	0.98371 - drained
new STD.	(0.98347)
"	0.98334
Repeat	0.98360
New Std.	(0.98344)

New IAPSO water

IAPSO STD. set 1.00009 null @ 4.86
" 1.00016 " " 4.88
" 1.00020
" mix all 1.00046
" " 1.00112

Sub Std. #1

Sm. btl. { Sub STD. 0.99594
" " 0.99590
" " 0.99590
→ reserve 0.99606
large btl. Sub STD. 0.99581

Sub STD #2

STD #1 working btl. 0.99593 set null @ 0.99590
" " reserve 0.99590
" " " 0.99589
" " " 0.99592
STD #2 1.00160
" " 1.00168 } 1.00165 S 35.065
" " 1.00167

STD #2 working set @ 1.00165
" " reserve 1.00169
" " " 1.00175 } set null 1.00170
" " " 1.00174
STD #3 1.00201
1.00198 } set null 1.00200
1.00200

Waters 27 June 80

Elapsed Time	R.	δ	
0403	0.97662	34.08	
0615	0.95880	33.38	
0715	0.97342	33.95	
0805	1.01813	35.70	
0910	1.00880	35.34	
1010	1.01066	35.43	
	using sub-std. #1		
1120	0.96406	33.58	
1630	0.99040	34.62	
1750	0.99778	34.91	
1840	0.99189	34.68	
2000	0.98456	34.39	
2200	0.99957	34.98	
2300	1.02576	36.01	
2348	1.03139	36.23	
sub. STD.	0.99588	34.83	(34.839)
	28 June 80	sub. STD #1	reading 15.6 on meter ↳ mull
0027	1.03002	36.18	
0125	1.03547	36.40	
0230	1.03239	36.27	
0415	1.02555	36.00	
0520	1.02905	36.14	
0640	1.02007	35.79	
sub. STD.	0.99574 remull	34.833	(34.839)
0825	1.00136	35.05	
0940	0.98803	34.52	
1050	1.00536	35.21	
1140	1.00023	35.00	
1313	0.99202	34.68	
1405	0.97872	34.16	
sub. std.	0.99588	34.838	(34.839)

28 June (cont) sub. std #1

Time	R		δ	
1456	0.97222		33.91	
1542	0.96734		33.71	
1621	0.96518		33.63	
1702	0.99222		34.69	
1755	1.00977		35.38	
1847	1.01220		35.48	
sub STD.	0.99582	re mull	34.836	(34.839)
1920	1.01164		35.45	
1958	1.01658		35.65	
2039	1.02425		35.95	
2122	1.01947		35.76	
2203	1.01057		35.41	
2330	1.01072		35.42	
sub STD.	0.99585		34.837	(34.839)

29 June 80 sub STD #2

0121	1.01538		35.60	
0232	1.00828		35.32	
0306	1.00927		35.36	
0338	1.00831		35.32	
0408	1.01769		35.69	
0520	1.02729		36.07	
sub. std.	1.00204	re mull	35.081	(35.065)
0645	0.99949		34.98	
0730	0.96556		35.65	
0835	0.97332		33.95	
0918	0.99228		34.69	
0950	0.99957		34.98	
1025	0.99862		34.94	
sub std	1.00083	re mull	35.032	(35.065)
1118	0.98837		34.54	
1147	0.98794		34.52	
1248	0.99898		34.96	
1354	1.00647		35.25	
1513	1.02125		35.83	
1652	1.00344		35.13	

(cont)

29 June (Cont)

Sample	R	δ ‰	
Sub std #2	1.00160 re null	35.063	(35.065)
1822	1.00877	35.34	
1944	1.00742	35.29	
2045	0.99307	34.72	
2145	0.99368	34.75	
2330	0.99483	34.79	
——— 30 June 80 ———			
0057	0.98722	34.49	
sub. std #2	1.00151 re null	35.059	(35.065)
0158	0.98711	34.49	
0318	0.96630	33.67	
0430	0.99388	34.76	
0540	0.99067	34.63	
0640	1.01691	35.66	
0800	1.00394	35.15	
sub std #2	1.00141 re null	35.055	(35.065)
0925	1.01199	35.47	
1035	1.00574	35.22	
1438	0.98689	34.48	
1549	0.97795	34.13	
1707	0.97898	34.17	
1825	0.98694	34.48	
sub std #2	1.00155	35.061	(35.065)
1932	1.00293	35.11	
2157	1.00784	35.30	
2323	1.01298	35.51	
——— 1 July 1980 ———			
0007	1.00505	35.19	
0153	1.00742	35.29	
sub std #2	1.00163	35.064	(35.065
	sub std #3	δ 35.079	
0430	0.99331	34.73	
0605	0.99580	34.83	
0730	0.97465	34.00	
1419 re null	1.01703	35.66	

1 July (cont)

0840	0.96954	33.80	
1005	0.98331	34.34	
1107	0.98397	34.37	
sub std #3	1.00189	35.075	(35.079)
1537	1.01519	35.59	
1710	1.01254	35.49	
2010	0.98124	34.26	
2233	0.98560	34.43	

2 July 80

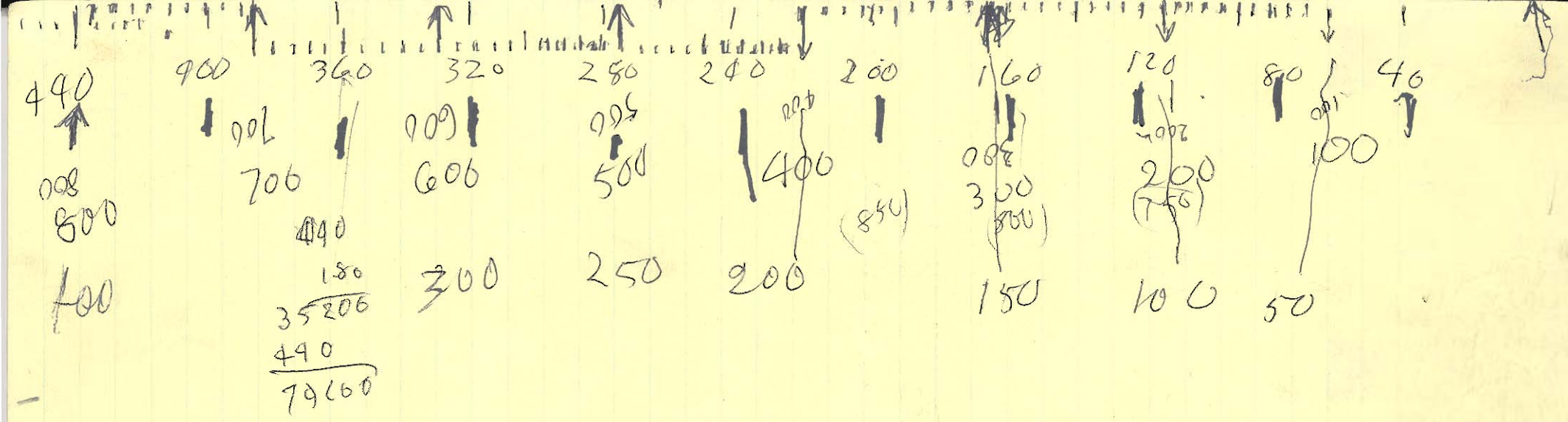
0950	0.98184	34.28	
1046	0.99060	34.63	
1148	0.99124	34.65	
sub std #3	1.00205	35.081	(35.079)

3 July 80

0510	1.01547	35.61	
0800	1.02945	36.15	
1002	0.99568	34.83	
1128	0.99515	34.81	

4 July

0055	0.99863	34.94	
0225	0.99150	34.66	
0600	0.98872	34.53	
0645	0.99327	34.73	
0730	0.98796	34.52	
0830	0.98994	34.60	
1005	1.00023	35.00	
1144	1.00405	35.15	
1430	1.00784	35.30	



928 HIT
926 - picked up to 2½ km
930 Move to

R.52

1055 -		45.58			54.15		
1058 —	3/5	44.06 (52)	87		54.42 (27)	45 ←	210
1100 -	24	44.71		83	55.00		
1125		42.78			57.13		
1127 -	2/5	42.62 (16)	39		57.30 (17)	45 ←	465
1130		42.39			57.56		
1130		42.39			57.56		
1132	2/5	42.25 (14)	35		57.38 (18)	44 ←	620
1135		42.04			58.00		
1140		41.66			58.45		
1142	2/5	41.52 (14)	36		58.63 (18)	45 ←	765
1145		41.30			58.90		
1145		41.30			58.90		
1147	2/5	41.55 (25)	63		59.08 (18)	45 ←	~~875~~
1150		40.93			59.35		
1200		40.25			00.22		
1435		41.35		83	59.27	Line 2	
→ ON BOTT		41.30			59.26	- - - Haul 1	
1430	24	41.28		83	59.26		

add 4

					LAT.	Long.
0400–0430	8 - 8:30	298.6°	0.8	knots	25°9.95	83°58.66
0430 - 0500	8:30-9	210.5°	0.8	"	25°9.52	84°02.59
0500 - 0530	9-9:30	232.2°	0.5	"	25°10.03	84°06.62
0530 - 0600	9:30-10	221.2°	0.5	"	25°10.03	84°10.74
0600 - 0630	10-10:30	222.0°	0.7	"	25° 10.03	84° 14.87

15°
360.0
298.6
61.4°

360.0
210.5
150.5

1.8
400
732 m

Punger 20 / 400 f ~ width

20 f

20 / 732 = 36.6
60
132
120
120

400 f width ~~fm~~ Punger to baller distance

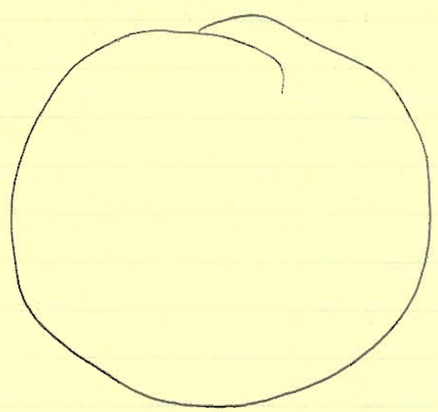
1) TURN Both switches on

2. — 30 min line — — — —

3. Don't use gate ; only punger every the time

4) Key on , baseline off 400

5) Punger only 400



400 f = 1 sec
800 f = 2 sec
2000 5 sec

Path

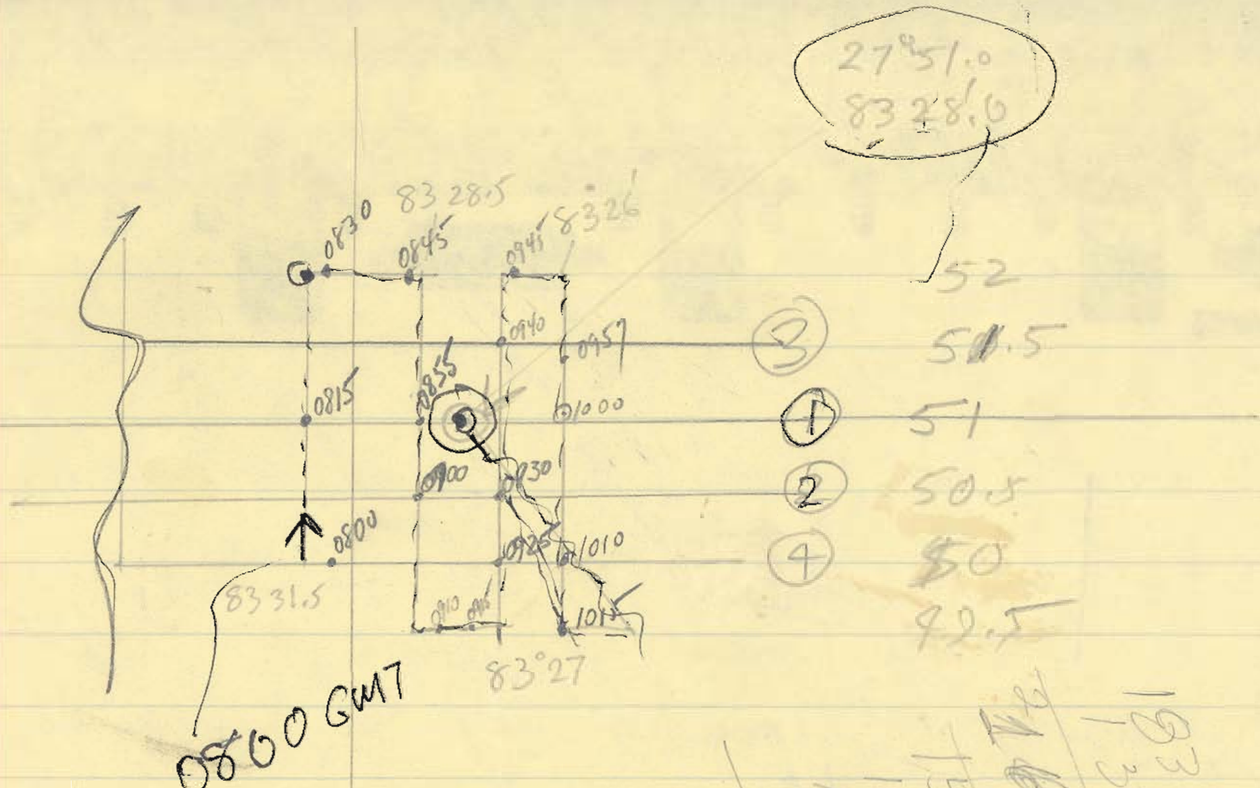
Chart speed

Gate ~~storage~~ ~~(programming)~~

Length Key pulse (ON)

Baseline chart off

ON ON
O O



83°30'

T-W

Th

6:00
6

16
~~14.8~~ 15
14.8 15
6

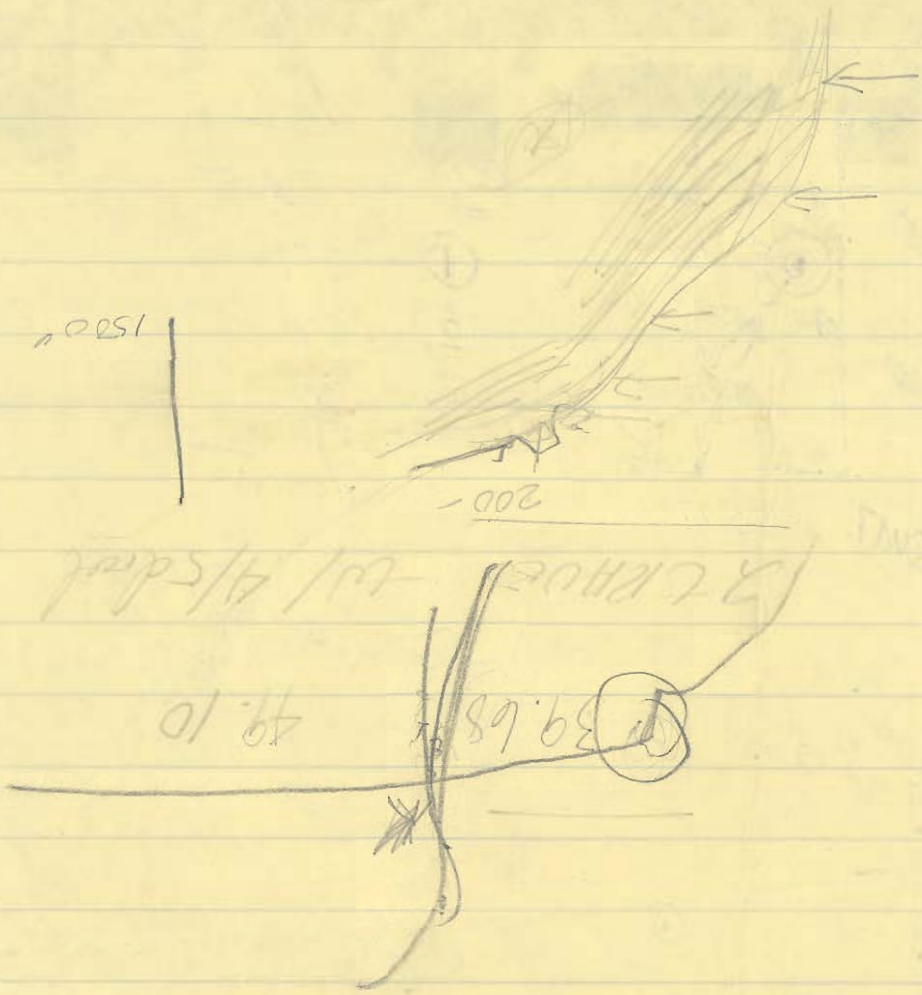
2250
750
375
3375

52
58

Southern Lat. Long. 83°25.5
↓
83°27.5

Central Lat. Long. 83°26.5
↓
83°29.0

Northern Lat. Long. 83°26
83°28.5



1700 2nd 4 hrs Acoustic 2100 4
16 hrs dodging 1pm. 3rd. 20
3 hrs Acoustic 4pm 23 31.
8 hrs trawling 3 hauls 12 Pay Mids.

St 09.2
24 51.4